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Claims.

1. A micro electromechanical system switch including a fixed contact (24, 42) and a moveable contact (35) on an armature (30)

characterised by:

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electrodes (22, 34) associated with both the fixed and moveable contacts for providing an electrostatic switch operation;

10 piezoelectric material (37) with associated electrodes (36, 40) for bending the armature (30) upon application of electric voltages and providing a piezoelectric switch operation;

the armature being of curved shape which is bent away from the fixed contact (24) when in a switch open condition with zero applied voltage;

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the arrangement being such that operation of the piezoelectric material (37) bends the armature towards the fixed contact (24) and bends the moveable contact (35) into a substantially parallel alignment with the fixed electrode for clamping of the fixed and movable contacts under electrostatic force from the electrostatic electrode (22, 34).

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2. The switch of claim 1 wherein the fixed contact are transmission line contacts and the moveable contact is a switch contact for switching parts of a microwave system.

25 3. The switch of claim 2 wherein the moveable contact is a switch contact with at least two protuberances for connecting two electrically isolated parts of a signal line together.

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4. A method of providing a micro electromechanical system switch having a movable armature (30) mounted on and separated from a substrate (21), the method including the steps of:

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providing a substrate (21) carrying a fixed metal layer forming a fixed contact (24), electrostatic switch actuation electrodes (22) and electrical interconnects (25, 26);

10 providing an armature having a mechanical layer (38) carrying at least one movable switch contact (35) for electrical switching, an electrode (34) electrostatic actuation, and carrying a layer of piezoelectric material (37) between two electrodes (36, 40),

the layers comprising the switch having variable in-plane stress and/or stress gradient across their thickness for causing the armature in its free state to adopt a curved

15 condition bending away from the substrate;

the arrangement being such that operation of the piezoelectric material (37) bends the armature (30) towards the substrate (20) and bends the moveable electrostatic actuation electrode (34) into a substantially parallel alignment with the fixed

20 electrostatic electrode (22) for clamping of the moveable switch contact (35) to the fixed switch contact (24) under electrostatic force.

5. The method of claim 1 wherein the fixed metal layer forms a part of a coplanar waveguide transmission line and the fixed contact is a part of this transmission line.

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